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Done Deal! Advisor impact on Pricing, Premia, Returns, and Deal Completion in M&A

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Abstract: We study the role of financial advisors in M&A for different advisor engagement constellations. We observe positive effects of both target and acquirer advisors on deal completion and prices. The unexpected positive price effect of acquirer advisors is further supported by evidence for higher premia and lower announcement bidder returns. We establish causality of pricing effects using matching and instrumental-variable approaches, making use of the impact of Lehman's collapse on former Lehman clients. We explain our findings in terms of governance: advisors' and executives' incentives form a potential source of value destruction.

Highlights

- Target financial advisor engagement leads to higher prices and premia, and to lower announcement returns.
- Acquirer financial advisor engagement also leads to higher prices and premia, and lower announcement returns.
- Both target and acquirer advisors increase transaction completion rates.
- Price effect of acquirer advisors can be explained by weak governance.

KEYWORDS: Mergers & Acquisitions, Financial Advisors, Transactions, Governance

JEL CODES: G24, G34, G41

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Online Appendix available at
https://www.dropbox.com/s/3yzaj4x0a6k0wbu/ET_DoneDeal_Online%20Appendix_dec2_2020.pdf?dl=0 .

1. Introduction

The decision to engage an advisor is a central question in any mergers and acquisition process. The decision is affected by the different parties' expectations regarding advisors' effects on deal completion and the resulting prices, premia paid, and returns achieved. This paper provides evidence on how advisor engagement on both sides of the transaction is associated with deal completion, as well as relative deal pricing and premia: do target ("sell side") financial advisors achieve higher prices and premia for sellers? Do acquirer ("buy side") financial advisors achieve lower prices and support negotiating lower acquisition premia for buyers? We also assess the effect of advisor engagement on cumulative abnormal announcement returns. We establish a framework to discuss how client objectives to both optimize deal pricing and secure transactions might be a source of value destruction.

Mergers & Acquisitions ("M&A") describes the process of acquiring assets, an entire firm, or an operating business of a firm, from another party. Throughout the process of identifying, analyzing, and negotiating an M&A transaction as a buyer or seller, financial advisors can be hired to facilitate the process by providing services along technical expertise in valuation, negotiation expertise and industry knowledge. Advisor roles encompass M&A management, including the initiation and subsequent coordination of transaction parties' management meetings and negotiations, often as the counterpart to the advisors on the other side of transactions. In this role as "orchestrator" the financial advisor usually also supports coordination of other advisors, such as the client's legal, tax or strategic advisors.

On the sell-side, clients usually demand support in the identification of potential buyers, preparation of the key selling document, the information memorandum, which includes a detailed description of the target's strategic and financial position, also in particular the projections of revenues, costs and profits ─ ultimately free cash flows ─ that the management

of the seller is expecting to achieve in the next three to five years. Projections are modeled based on assumptions for macroeconomic, volume, price and cost drivers and impediments. Due to the sensitivity of discounted cash flow models with respect to the assumptions for such financial line items and also to assumptions about weighted average cost of capital and terminal growth rates, a thorough triangulation of the set of assumptions is one of the primary goals of the buyer. Therefore, buy-side financial advisors support not only the identification of the M&A target, but also deliver essential commercial and financial due diligence services, which refer to the validation of the seller's price expectation based on the management business case shared with the potential buyer.

Ultimately, firms *acquiring* an asset are obliged to create value for shareholders and are thus required to close transactions at a price that allows them to realize gains from potential synergies with the existing assets of the firm. This leads to the expectation that the engagement of an acquirer financial advisor is associated with comparatively lower prices, thus paying relatively lower premia and achieving higher announcement returns. Similarly, the management of the acquisition *target* should hire a financial advisor to obtain services to optimize the transaction from their perspective, viz., achieving comparatively higher prices by negotiating higher selling premia, leading to lower bidder returns. Both sides may be interested in improving the likelihood of deal completion and cumulative abnormal returns of the merged entity by using an advisor.

To better understand the incentive structure of financial advisors, McLaughlin (1990) studies the structure of investment banking contracts. He observes that advisors are incentivized by a high share of the total advisor fee being conditional upon successful completion of the deal (making up about 80% of total fee). He also documents that this feature exists for both sell-side and buy-side advisors. This is interesting in the light of a missing contractual incentive for acquirer advisors to minimize the deal price, in the context of the general responsibility of senior

executives to invest shareholders' equity efficiently. Rau (2000) examined the determinants of the market share of investment banks acting as advisors, finding that it is positively related to the contingent fee payments charged by the bank and the completion rate of transactions achieved. The pressure on financial advisors to gain market share might thus exacerbate the consequences of the missing incentive for lowering prices. Hunter and Jagtiani (2003) investigate deal completion in the context of top tier advisors. They find that top-tier advisors are more likely to complete deals and to complete them in less time than lower tier advisors, while synergistic gains realized by acquirers declined when top advisors were used. This observation can be interpreted in terms of clients sacrificing synergistic gains, thus shareholder value, for higher deal completion likelihood: buyers and their advisors seem to focus strongly on deal completion. Consistent with these results, Ismail (2010) finds in a sample of U.S. M&A deals that tier-one advisors destroy substantial value for their clients, and Hayward (2003) shows that financial advisors derive power over their clients from specialized expertise, leading them towards complex solutions with potentially adverse outcomes.

Sleptsov et al. (2013) suggest that exclusive buy-side advisor engagement decreases expected acquisition performance and emphasize the importance of competition between acquirer advisors. Agrawal, Cooper, Lian and Wang (2013) examined the effect of common advisors in M&A transactions (i.e., advisors that are mandated by both buyer and seller for the transaction at the same time), finding that transactions with common advisors take longer to complete and provide lower premiums to the sellers than deals without common advisors. They argue that common advisors are somewhat better for acquirers, because in such an engagement constellation the acquiring client is the "surviving" entity that could hire the advisor in the future again. Agrawal et al. (2018) investigate the determinants and deal valuation consequences of private sellers' choice of hiring M&A advisors or top-tier advisors. They find that advisors, especially top tier advisors, can find and negotiate better deals for sellers. The

result is consistent with our findings for sell-side advisors. While Agrawal et al. (2018) examine the effects of advisor engagement on deal pricing for private sellers only, the current paper studies the effect of advisor engagement on both the buy-side and the sell-side, in publicly and privately held targets. We study both deal pricing and completion rates. Observation of completion rates allows us to study both relevant dimensions of an M&A transaction, deal pricing and deal completion, in the same data sample. We aim to identify general principles for the effects of advisors on M&A outcomes, and relate these to governance issues in the context of executives' financial incentives and careers paths. We will argue that top executives have strong financial incentives to secure potentially overpriced deals. Similarly, lower tier executives may substantially benefit in career terms form pushing costly deals to completion: involvement in successful mergers has become a career accelerator (Botelho et al., 2018), if not precondition for reaching the C-Suite (Groysberg et al., 2011).

The literature suggests that, despite many mergers being efficient, overpricing and value destruction from the acquirers' shareholders' perspective is prevalent in M&A deals (Andrade et al., 2001; Moeller et al., 2004; Renneboog and Vansteenkiste, 2019). Executives' overconfidence and hubris have been shown an important cause of overpayment for acquisition targets (Hayward and Hambrick, 1997; John et al., 2010; Malmendier and Tate, 2005; Roll, 1986). We suggest an additional perspective by considering self-interest of top executives to maximize their bonuses, which are reflected in the contractual terms they close with advisors. Grinstein and Hribar (2003) find that approximately 39% of acquiring firms reward their CEOs for successful completion of a merger or acquisition deal (M&A bonus). Further, the authors suggest that CEOs receive higher M&A bonuses when deals are larger, observing that CEOs effort and skill do not explain a significant amount of the variation in the bonus. In addition, they find that M&A bonuses do not appear to be linked to deal performance. Grinstein and Hribar (2003) conclude that this misalignment of incentives, allowing CEOs to extract rents

from shareholders through additional bonuses, may lead to self-serving behavior at the costs of shareholders equity. Jeongil et al.'s (2015) results point in a similar direction, showing that CEOs with below-average pay engage more often in acquisition activity, in order to realign their pay with that of their peers. The governance-problems based framework is further supported by recent insights into private versus public acquirers. Golubov and Xiong (2020) show that private acquirers pay lower prices for targets and have a better post-acquisition performance. They show that the different governance arrangements in private firms contribute to the observed effects. Wang, Xie and Zhang (2020) find that acquirers create higher shareholder returns when advised by investment banks with more experience in the target industry. Chang, Shekhar, Tam, and Yao (2013) also examine the role of financial advisors play in M&A, and focus on the industry expertise of the acquirer advisor, finding that industry expertise is associated with higher deal completion but not with any valuation effects of acquisitions. Similarly, Chang et al. (2016) focus on the role that financial advisors provide in M&A by focusing on acquirers that hire the target's ex-advisors. They find that these advisors pay lower takeover premiums and secure a larger proportion of merger synergies.

Becher, Cohn, and Juergens (2015) study determinants of deal completion. They find that the probability of completion increases with the favorability of acquirer analyst recommendations and decreases with the favorability of target analyst recommendations. They argue that these effects are driven by the effects of recommendations on the target shareholders willingness to accept the deal. In cross border mergers with US acquirers, Francis, Hasan, and Sun (2014) find that shareholders care more about the advisor being US-based than having experience in the target country. They argue that the certification is most important for shareholders. In the current paper we zoom out and analyze transactions across various industries and countries. M&A is a global business, and contractual incentives are very homogenous across countries and industries. We aim general lessons about M&A governance.

We provide an empirical analysis of historical transaction data from Thomson Reuters SDC Platinum, examining 35,979 initiated M&A transactions between 1978 and 2020. Our analysis proceeds as follows. We first show that advisors on either side of the transaction correlate positively with prices, premia, and deal completion likelihood. Further, we find that both advisors, i.e., also the buy-side advisors, are significantly negatively associated with bidder returns, adding to our observation that advisors might destroy value for the buy-side. We next consider the potential causality problem arising from endogenous advisor engagement. We first apply a matching procedure to compare similar deals with and without an advisor. We find robust evidence for a causal link between advisor engagement and deal completion, prices, premia, and bidder returns for both acquirers and targets. We next apply an instrumental variable approach, using advisor clients affected by the Lehman failure to instrument for endogenous advisor engagement. The IV analysis confirms the surprising positive causal effect of acquirer advisors on prices. We shed some more light on the underlying mechanism of positive acquirer price advisor price effects by comparing listed and non-listed firms and by looking at differences in bargaining power.

Our different ways to address the question provide converging evidence that advisers cause increases in price and premia both on the sell-side (as expected, create value for owners) and buy-side (potentially destroy value for acquirer shareholders). But advisor engagement on both sides also increases deal completion likelihood. In our sample, 55% of the transactions involve an acquirer advisor, and 62% of the transactions involve a target advisor. Thus, from the perspective of the acquirer shareholders, advisor engagement may increase the risk that value is destroyed in an acquisition. From the perspective of the target shareholders, it is, in contrast, surprising that only 62% take up the opportunity for a better and more secure deal with advisor support. We provide further interpretations of these results in the concluding discussion.

2. Data and Methodology

2.1. Data

We use Thomson Reuters SDC Platinum database on mergers and acquisitions transactions to gather all reported initiated M&A transactions during 1978 and 2020. Data is sourced through direct deal submissions from global banking and legal contributors coupled with extensive research performed by a global research team, collecting data from regulatory filings, corporate statements, media, and pricing wires. According to Thomson Reuters, more than 2,500 control validations occur at the point of data entry. We focus on transactions with a deal size above $ 0.5m and exclude transactions with negative Ebitda Margin or Ebitda Margin larger than 1 and negative Sales Absolute (technically defined below)[1], but otherwise make use of the full data set. Contracts with advisors in full scope transactions are rather comparable to transactions of partial set of assets. Moreover, contract structure in terms of variable and fix components are comparable across different client industries and countries (Lessem and Wright, 2019). We further include additional data sets on stocks and indexes from CRSP (Center for Research in Security Prices) to compute cumulative abnormal announcement returns, since this data is not included in our main data set (Thomson Reuters SDC Platinum).

2.2. Variables

The key variables of interest in this study are the relative deal price, premia paid, and the deal completion status. We also provide analyses of bidder returns. To construct a measure of relative deal pricing, we make use of the *Deal Size*, i.e. the selling price, and the target's next twelve months earnings forecast, *Ebitda Absolute,* in the year of the transaction. *Ebitda Absolute* is a profitability indicator defined by the absolute amount of earnings before interest, tax, depreciation, and amortization (see Table A1 in the Appendix). *Ebitda Absolute* and *Deal*

[1] Firms with a negative Ebitda Margin and negative Sales Absolute are excluded from our analysis as Ebitda Multiple is not a robust valuation indicator for such assets. We exclude in total 607 initiated transactions due to negative Ebitda Margin or Ebitda Margin larger than 1 and negative Sales Absolute.

Size values are reported in U.S. dollars. We measure relative deal price using the *Ebitda Multiple*, defined as the ratio of *Deal Size* to *Ebitda Absolute* of the M&A target. It is a measure to indicate relative deal pricing in M&A transactions that is widely used in the context of M&A or valuing businesses in general (Loughran and Wellman, 2011; Damodaran, 2005; Koller, Goedhart, and Wessels, 2010). The *Ebitda Multiple* allows to compare negotiated deal terms regardless of the size of the M&A target. This is essential in our analysis as we observe a high variation of transaction and firm sizes in our data set. Because of the highly skewed distribution of the *Ebitda Multiple*, we transform it into its logarithm, indicated by the variable *Ebitda Multiple (Log),* in our analyses. We define the premia paid by acquirers, *Premium 1 Day, Premium 1 Week* and *Premium 1 Month*, as the difference between the offer price and the target's closing stock price 1 day (1 week; 1 month) prior to the original announcement date, expressed as a percentage. To account for outliers, we winsorize the premia at level 1% and 99%. Premia are available in the Thomson Reuters SDC Platinum data.

We measure bidder cumulative absolute returns with the variables *CAR(-1/+1)*, *CAR(-2/+2)*, *CAR(-3/+3), and CA4 (-4/+4).* We use CRSP database to model Cumulative Abnormal Returns (CAR). We estimate the model over a 255-day window ending 46 days prior to the announcement date, using CRSP Value Weighted Index as our market proxy. We report CAR over a 3-, 5-,7- and 9-day window. Further, *Deal Status* is registered in the data set with five possible status levels: Deal completed, deal pending, deal intended, deal withdrawn, and other deal status. For our analysis, we create the dummy variable *Deal Completed*, coded as one if Deal Status equals "deal completed," and zero else.

The presence of target advisors or acquirer advisors is measured by binary indicators. The variable *Target Advisor* is one in case a target advisor was reported and zero otherwise, and the variable *Acquirer Advisor* is one in case an acquirer advisor was reported and zero otherwise. The presence of the target advisor and acquirer advisor are the key independent

variables in our study. Specific demands of clients vary, thus not all services described are contracted, as laid out in detail in the Introduction. As indicated by McLaughlin (1990), advisor contracts are typically structured with a fixed payment and a contingent payment upon successful deal completion depending on deal size (approximately 80% of the total advisor fee). Acquirer advisors, typically also investment banks and management consultants, manage the buy-side process, which includes deal sourcing through identification of M&A targets, target screening (a first filter of relevant M&A targets regarding strategic and financial fit), drafting indicative offers, due diligence and support in preparation of negotiation, signing and closing of deals. Contracts of buy side advisors are structured also with a high variable payment contingent upon deal completion, raising substantial governance concerns about the missing incentive to negotiate prices down.

Given the heterogeneity of our sample of transactions, we include a set of control variables. These include the size of the M&A target, defined by the variable *Sales Absolute* measured in U.S. dollars. We transform *Sales Absolute* into its logarithm, indicated by the variable *Sales Absolute (Log),* because of its highly skewed distribution. Further, we use the profitability of the M&A target, defined by the variable *Ebitda Margin,* which is calculated by annual *Ebitda Absolute* over annual *Sales Absolute*. We add further controls at the level of the deal: *Deal Attitude* (indicated by dummy variables "friendly", "neutral" or "hostile" attitude of the acquirer towards the seller), the *Form of the Transaction* (indicated by dummy variables "acquisition", "merger" or "other form of transaction") and the *Target Public Status* (indicated by dummy variables "public", "private" and "other public status"). To account for potential information asymmetry between acquirer and seller due to geographical distance or industry specialization (Uysal et al., 2008), we add the dummy variables *Same Country* (coded one if acquirer and seller headquarters are located in the same country and zero else) and *Same*

Industry (coded as one if the acquirer and seller operate in the same industry and zero else). Finally, we include target country, year, and industry fixed effects.

Tables 1 and 2 show descriptive statistics for the variables used in this study for two sub samples, *Completed Transactions* (Table 1) and *Incomplete Transactions* (Table 2). They summarize data on transactions financials, on the status of the M&A targets, and on the properties of the deal along two time periods, 1978 to 1999, and 2000 to 2020. We split our sample in two time periods in order capture potential time effects beyond the use of year fixed effects. For the entire sample, the average *Ebitda Multiple* equals 19.5. The average Deal Size is almost $ 719m, while average Sales Absolute are about $ 730m. 81% of the initiated transactions in our sample are completed.

< Table 1 >

< Table 2 >

Table 3 shows summary statistics of key variables of interest, segmented along the different advisor engagement constellations we consider: TA+AA+ (Advisors engaged on both sides), TA-AA+ (only acquirer advisor is engaged), TA+AA- (only target advisor is engaged), and TA-AA- (no advisor is engaged). The raw numbers show that deal completion is positively associated with advisor presence. Moreover, both target and acquirer advisor engagement seem to be positively associated with realized Ebitda Multiples. In the next section we will systematically assess these associations. The following section will then consider the causality underlying the relationships.

< Table 3 >

3. Main Result: Association of Advisor Engagement with Relative Deal Pricing, Premia, Cumulative Abnormal Returns and Deal Completion

In this section we establish our main results regarding the association of advisor engagement with deal pricing, premia, cumulative abnormal returns, and deal completion likelihood. We split our sample in two time periods, 1978 to 1999 and 2000 to 2020, investigating advisor effects across industries and countries. Table 4 shows the results for deal pricing, premia paid and CARs in the time period 1978 through 1999. Multivariate regression analysis with a full set of controls and country, year, and industry fixed effects of Ebitda Multiples on advisor dummies in model (1) shows a positive correlation of both target and acquirer advisor with pricing multiples. Models (2) to (4) show no significant association of either advisor with acquisition premia paid. Models (5) to (8) analyze the correlation of CAR with advisor presence. We find that target advisor presence is significantly negative correlated with CARs for the 3-day and 5-day window. We observe a weakly significant negative association of the acquirer advisor with CAR for the 3-day window. F-Tests show that there is a significant difference between coefficients of target advisor and acquirer advisor in terms of Ebitda Multiples (stronger effect for acquirer advisor, $F=2, 946$, $p<0.001$), but no significant difference between Premia and CARs.

In Table 5, we conduct the same analysis for the time period 2000 to 2020, confirming results for Ebitda Multiples. Moreover, we find a strong and positive association between both advisors and the premia paid. In this later period there is significant evidence for a negative association of announcement returns with target advisors for all event windows, and also a significantly negative association with acquirer advisors for the three-day window. The economic significance of the associations of advisor engagement with Ebitda Multiple are substantial (29.8% and 31.5% larger Multiples than in the absence of the respective advisor during the earlier, and 29.7% and 35.1% during the later period). Further, during the 2000-2020 period, we find that premia paid by acquirers are 14.8% to 21.8% higher when engaging a buy-

side advisor; and 19.4% to 23.5% higher with a target advisors present. Finally, we find that bidder returns are 48.1% lower for buyers with acquirer advisor mandated in the time period 2000-2020 in the three-day event window around the announcement of the transaction.

While the positive correlation of target advisors with prices and premia and negative correlation with bidder returns is consistent with an interpretation of a positive advisor effect on value creation for the owners of the target (causality will be assessed below), the positive association of prices and premia and the negative association with bidder returns with acquirer advisors is difficult to square with value creation for the buy-side: ceteris paribus, higher prices and premia paid mean higher acquisition cost and therefore lower potential gains for the acquiring firm, indicated by significant lower bidder returns. Different interpretations will be discussed below. We next look at deal completion.

Table 6 shows that the presence of both target and acquirer advisors is significantly correlated with larger deal completion likelihood in both sub periods. This holds in probit models as well as linear probability models. There is no significant difference between the coefficients of target and acquirer advisors in the probit model 1 and model 2. In the linear probability models 2 and 4, we also find no significant difference between the coefficients of target and acquirer advisor for both sub periods.

< Table 4 >

< Table 5 >

< Table 6 >

We observe a negative interaction of target and acquirer advisors. Interaction terms cannot easily be interpreted in nonlinear models, but the linear probability models confirm the sign of the observed effect (Hoetker, 2007). The result is consistent with the raw data showing that the presence of either buy side or sell side advisor increases completion rate from about 70

to above 80 percent, with no additional benefit of joint presence of both advisors. Marginal effects analysis of the OLS model suggests larger completion likelihood of about 13% for target advisors during 1978-1999 and 9% during 2000-2020; and about 14 by acquirer advisors during 1978-1999 and 10% during 2000-2020. Considering the strategic relevance of an acquisition or a divestiture for a company to successfully implement its long-term business objectives, these differences in completion rates are substantial.

4. Investigating Causal Effects of Advisor Engagement: A Matching Approach

4.1. Matching Methodology

Having shown the presence of substantial positive associations of advisor engagement with pricing indicators and deal completion, we next aim to establish whether these correlations can be interpreted in terms of causal effects. Several selection issues may be important in the current setting. Firms may be more likely to hire advisors, or advisors may more actively recruit engagements, on potentially larger and more likely deals. Advisors may also identify higher-synergy deals, which should not be interpreted as price effects. Given our large data set, we can use matching methodology (Caliendo and Kopeinig, 2008) to overcome selection issues.[2] The idea is to compare similar deals (in terms of observable target pre-deal properties) with and without an advisor present. To make inferences about the impact of advisor engagement on deal pricing and completion, we need to examine how the transaction outcome would differ had there been no advisor engagement. Because the counterfactual for a given transaction is not observed, we formalize the problem as the potential outcome approach or Roy-Rubin-model (Roy, 1951 and Rubin, 1974; Caliendo and Kopeinig, 2008). The fundamentals of the Roy-Rubin model are individuals (here: transactions), treatments (here: with or without advisor engagement) and outcomes (here: Ebitda Multiple, Premia, CARs, and Deal Completion).

[2] We also ran a Heckman selection model analysis. This analysis yields very similar estimates as the OLS model of Table 4 and 5. Results are available in the Online Appendix.

To estimate the causal treatment effects of advisors on relative deal pricing, premia, bidder returns and deal completion, we apply propensity score matching. Our matching model assigns the data to two groups: the "treated" group, which includes those transactions with an advisor, and the control group that includes transaction without an advisor. Treatment *D* is a binary variable that equals *D*=1 for treated observations and *D*=0 for control observations. In the first step, we estimate a logit model with D as latent variable, for the propensity of transactions to be conducted with support of an advisor. The vector of explanatory variables *x* includes the variables *Sales Absolute (Log)*, *Ebitda Margin*, *Industry of M&A Target*, *Country of M&A Target, Deal Attitude, Public Status of the Target, and Year of Transaction.* The propensity score *p(x)* is the predicted probability that an acquirer advisor is engaged given the characteristics *x*:

$$p(x) = logit(D = 1|x) = E(D|x) \quad (1)$$

In the second step, the model matches transactions from the treated and control sub-samples on the basis of their propensity scores. Following Caliendo and Kopeinig (2008), we chose the nearest neighbor matching estimator with replacement. Thus, our estimator selects those transactions without advisor as matching partners for a transaction with an advisor that are closest in terms of its propensity score. Transactions from the control group can be used multiple times as a match for a transaction in the treated sample, increasing matching quality and reducing model bias. In the third step, we calculate the *Average Treatment Effect* (ATE) for the dependent variable of interest y (e.g. Ebitda Multiple (Log)), which is the difference between outcomes y of the matched transactions with advisor and those without advisor.

$$ATE = E(y|\text{x}, D = 1) - E(y|\text{x}, D = 0) \quad (2)$$

We apply the matching model both to the entire sample, and to a restricted sample of those transactions that include an engagement of an advisor by the other side of the transaction (e.g., presence of target advisor when analyzing acquirer advisor effects). We expect that these sub

samples allow for an even more robust identification of causality as they focus on transactions that share some features that lead to the engagement of an advisor on at least one side of the deal. ATE is only defined if the variables in *x* do not perfectly predict treatment D. The *region of common support* is defined by the overlap between the treated and controlled observations in terms of their propensity score. As suggested by Caliendo and Kopeinig (2008), we visualized the support of the treatment and control groups to confirm the common support assumption.

4.2. Matching Analysis

Table 7 shows the results of the matching estimation for both acquirer and target advisors, for the dependent variables Ebitda Multiple, Deal Completion, Premium (1 day, 1 week, 1 month), and the CARs (-1/+1, -2/+2, -3/+3, -4/+4). We find substantial and significant treatment effects for the whole sample for both advisor types for the dependent variables Ebitda Multiple, Deal Completion, Premia and CAR, confirming our main results reported in section 3. In particular, the negative effect of acquirer advisors on announcement returns shows significantly for all event windows now. The results are qualitatively and quantitatively robust if restricted to the sample of transactions with at least one advisor present. The effects are less sizable though for completions rates on the restricted sample, because the differences between groups become less substantial.

< Table 7 >

We assess the validity of the matching estimators using the visual inspection procedure as recommended by Caliendo and Kopeinig (2008). Figures 1 to 8 (acquirer advisor) as well as 9 to 16 (target advisor) in the Online Appendix visualize the support of the propensity scores for treated and control observations (left panel), and for the treated and the matched observations (right panel) for the full sample and restricted sample. We see that there is a full

overlap of propensity scores for treated and controls in all cases, and that all scores between zero and one are covered, although the distribution of propensity scores is often quite different for treated and control observations. However, given our large data set and the matching with replacement, we see that we can achieve a close to perfect overlap of the distributions (distributions are visually indistinguishable in most figures). There are no gaps in the supports. We conclude that the matching procedure has been executed efficiently. Sensitivity analysis following Becker and Caliendo (2007) shows that results are not sensitive to violations of the confoundedness assumption (i.e., unobserved joint influences on the advisor selection and outcomes).

Given the support for the validity of the propensity score matching approach presented here, we interpret the correlational results presented in Section 3 as causal effects of an advisor engagement on relative deal prices, premia, CAR, and deal-completion likelihood. For target advisors, this raises the question why target management does only engage advisors in about 62% of the cases. For acquirer advisors, it implies an unexpected effect of advisor engagement on pricing, premia, and CAR. In Section 6 we will probe further the interpretation of the acquirer-advisor induced price effects. Before moving to interpretation, we will present another perspective on causality, using an alternative, instrumental variable approach.

5. Instrumental Variable Approach: Lehman Failure and Advisor Engagement

5.1. Instrument

In this section, we present a different approach to establishing a causal interpretation of the associations of advisor engagement with pricing and deal completion, using instrumental variables.[3] We introduce the instrument *Former Lehman Client Post Crisis*. The basic rationale is that we predict an exogenously induced change of advisor engagement behavior by a specific

[3] Our sample does not provide sufficient data on premia and CARs to implement these variables in our IV model, which needs to work with the substantially reduced sample of the post Lehman failure period (see Table 5).

group, viz., former Lehman clients), triggered by the collapse of Lehman Brothers on September 15, 2008. The instrumental variable we construct represents the interaction between two variables: the variable Former Lehman Client, referring to clients who engaged the investment bank Lehman Brothers at least once in the time period of four years prior to its collapse; and the variable Post Crisis, which indicates the time period of four years after the collapse of Lehman brothers. In order to identify a causal interpretation of behavioral change of this group of clients, we implement a fixed effects model in which we test the effect of the interaction of Former Lehman Clients and the time period Post Crisis. Table 8 shows that the interaction of these two variables is significantly negative correlated with the engagement of acquirer advisor, indicating that this group of acquirers reduced its engagement of buy-side advisors after crisis. In the following, we will use this variable Former Lehman Clients Post Crisis to instrument the presence of acquirer advisor to test the robustness of the causal interpretation offered in section 4.

< Table 8>

We replace the potentially endogenous variable *Acquirer Advisor* with predicted values from a regression on our instrument. Our model is given by the two-stage structure: (1) estimate the first stage by predicting the potentially endogenous variables with only exogenous regressors, and (2) calculate the predicted values $\hat{y}_2$ and substitute them in the structural equation model

$$y_2 = x_1'\gamma_1 + x_2'\gamma_2 + \varepsilon \quad (3)$$

$$y_1 = \hat{y}_2'\beta_1 + x_1'\beta_2 + u \quad (4)$$

where y_1 is the dependent variable *Ebitda Multiple or Deal Completed,* y_2 is the potentially endogenous variable *Acquirer Advisor*, and x_1 are the other control variables, *Sales Absolute (Log)* and *Ebitda Margin*, and the deal level controls. We use fixed effects variables for each

acquirer, time period (year), industry of the M&A target and country (headquarters) of the target.

5.2. IV Results

Instrumenting the presence of the acquirer advisor, we confirm the causal interpretation of our main results, a positive effect of acquirer advisor engagement on both deal completion likelihood and relative deal pricing (Table 9 and 10).

< Table 9>

< Table 10>

6. Price Effects for Acquirer Advisors: Interpretation

Having established a causal link between advisor engagement on both sides of the deal and higher prices, we next focus on the mechanism and interpretation of the effect. We argue that the institutional setting promotes focus on deal completion and higher prices, for both acquirer and target executives and advisors. Only for targets are these goals aligned with shareholder interests. The price-driving effect observed for acquirer advisors is therefore consistent with an interpretation of overpayment and negative advisor effects for acquirer shareholders. We have seen that there is strong evidence that premia increase, and announcement returns are decrease if acquirer advisors are engaged. Our interpretation is also consistent with the broader literature showing that even with overall efficient deals, the buy-side owners do not typically benefit from acquisitions, while the target owners benefit strongly (Moeller et al., 2004; Andrade et al., 2001). However, an alternative explanation is possible. Acquirer advisors may help to complete a deal where unadvised buyers may not succeed, because they are too unwilling to increase prices, although the target is in fact more valuable. That is, advisors may identify important synergies that are not identified by unadvised buyers. We will probe this alternative interpretation in two additional analyses.

6.1. Listed versus Non-listed Targets

Several studies have argued that differences in information asymmetries when acquiring a private versus a publicly listed target have strong ramifications for the M&A process and the role of financial advisors (Agrawal et al., 2018; Custódio and Metzger, 2013; Golubov et al. 2012). Due to stricter accounting and reporting standards for listed firms, publicly listed M&A targets provide qualitatively and quantitatively better information. Deals with public targets are therefore easier to assess by both acquirers and the market, and are also more closely followed by the market. Consequently, there will be smaller discounts for public compared to private targets (Agrawal et al., 2018), and the increased market scrutiny will lead reputation-oriented acquirer financial advisor to cut better deals for their clients (Golubov et al., 2012).

Table 11 gives results for a specification that restricts the sample to those deals with a TA present. We focus on the effect of acquirer advisors and target public-listing status on prices, and on their interaction. We replicate the positive effect of acquirer advisors on Multiples, and also find a positive effect of target public-listing as suggested in the literature (Agrawal et al., 2018). Consistent with the reputation argument of Golubov et al. (2012), the interaction between advisor engagement and public status is significantly and substantially negative. The price-driving effect of acquirer advisors is especially severe in private deals where reputational concerns are reduced.

< Table 11 >

6.2. Bargaining Power

Previous studies have shown that it is easier for the buy-side to capture acquisition gains if the target is unadvised (Agrawal et al., 2018; Golubov et al., 2012). In Table 14 we show specifications with restricted samples of deals with either the target advisor present (model 1) or absent (model 2), respectively. In the absence of a target advisor, the acquirer advisor should

be able to play out its beneficial influence most strongly, realizing cheaper deals irrespective of the identified synergies. Table 12 shows that the effect of the acquirer advisor is similar and significantly positive for both the advised and unadvised targets. There is no indication that acquirer advisors make use of their bargaining power.

< Table 12 >

7. Discussion of Acquirer Advisor Impact in Monetary Terms

We have shown a positive causal effect of advisor engagement on Ebitda Multiples in M&A. For acquirer advisors we have argued for an interpretation in terms of overpayment on the basis of our data, and consistent with the governance-failure framework supported by the literature. If buy-side advisors destroy value for acquirer owners, it is of interest to establish an intuitive interpretation of the observed price effect. We suggest a financial model that quantifies marginal effects in monetary terms. We analyze the residual transaction value in US Dollars that is caused by the presence of the acquirer advisor versus a zero effect. That is, we use a neutral benchmark, rather than demanding that advisors realize cheaper deals. To quantify this value, we discount the reported average Ebitda Multiple by the marginal effects derived from the regression analysis. We use the results of Table 12 for the calculations. This table shows the acquirer advisor engagement effect on Ebitda Multiples in case target advisors are present in order to implement a rather prudent estimate. We calculate the effect using the estimate of 31.60% for all transactions in which the acquirer advisor completed a transaction, in which a target advisor was present and 37.8% in the absence of the target advisor. We discount the reported average Ebitda Multiple from 20.04 (AA and TA present) and 20.18 (only AA present) to 15.23 and 14.64 in order to determine the average Ebitda Multiple if the acquirer advisor effect were zero over these two constellations. We do this for all transactions with acquirer advisor present, separately for transactions with target advisor present and absent.

In the next step, we apply the adjusted Ebitda Multiple on the average Deal Size and Number of Transactions that reported an acquirer advisor, resulting in a lower total transaction value. The difference between the actual transaction value and the transaction value based on the adjusted average Ebitda Multiple indicates the deal value that is caused by the presence of the acquirer advisor. Since the impact (i.e., the coefficients in the regression model) of the acquirer advisor is positive, the monetary impact of the acquirer advisor on the transaction value is positive, which we interpret as overpayment following the literature. Applying our financial model as described to all transactions in which acquirer advisors had been engaged, we estimate the total US Dollar impact of the acquirer advisor between 4.7tn US Dollars between 1978 and 2020 (excluding acquirer advisor fees; in 2019 dollars). Details are in Appendix B.

8. Conclusion

This paper set out to clarify the role of financial advisors in M&A. Several papers have studied the role of advisors in specific segments of the market (non-listed firms, role of top-tier advisors), in specific contexts (industry experience, cross-border transactions). We took a broader look at the role of advisors on both the buy-side and the sell-side of the market, looking for general principles in how governance issues may translate in deal pricing and value creation. Investigating the association of advisor engagement with relative deal pricing, premia, bidder returns, and deal completion, we observe that both sell-side advisors and buy-side advisors positively correlate with deal prices, premia, and completion. At the same time, we find that both, the buy-side and sell-side advisor are significantly negative associated with bidder returns. Matching estimators, as well as instrumental variable analysis using the impact of the Lehman failure on Lehman clients, support a causal interpretation in terms of advisor effects. Our results support a causal effect, over and beyond possible selection effects due to endogenous advisor engagement and identification of potential deals by advisors. While the direction of the effects is in line with the expectation and evidence that sell-side advisors negotiate higher prices for

targets (Agrawal et al., 2018; Golubov et al., 2012), we find that buy-side advisors also have a price- and premia increasing effect and a decreasing impact on bidder returns - which might be an additional explanation for value destruction in mergers. Our analysis on deal completion similarly supports a causal effect, with both sell-side and buy-side advisors improving deal completion likelihood. Interpretations in terms of either improving deals (identifying important synergies and thus acquirer's willingness to pay) and in terms of value destruction (flawed incentive structure for executives and advisors) are possible. In several analyses zooming in into this question, the evidence points in the direction of value destruction. We find strong evidence for increased premia paid by buyers for deals with an advisor engaged on their side, and we find significantly negative evidence for announcement returns on deals cut by acquirer advisors. We find that acquirer advisors do not play out their bargaining power, and they increase prices most if stakes for their reputation are low. The findings are consistent with the broader literature on mergers and acquisitions showing that even for ex-post efficient deals, acquirer shareholders do not typically benefit acquisitions. In the following we will discuss interpretations of our findings considering incentive structures, advisor roles and prioritization of deal objectives.

Our results support a critical perspective on incentive structures, advisor roles and prioritization of deal objectives. Grinstein and Hribar (2003) show that top executives are incentivized by deal completion and high prices – even in the process of *buying* assets. They find that approximately 39% of acquiring firms reward their CEOs for successful completion of a merger or acquisition deal (M&A bonus). Further, the authors suggest that CEOs receive higher M&A bonuses when deals are larger, observing that CEOs effort and skill do not explain a significant amount of the variation in the bonus. They find that M&A bonuses do not appear

to be linked to deal performance.[4] Grinstein and Hribar (2003) conclude that this misalignment of incentives, allowing CEOs to extract rents from shareholders through additional bonuses, may lead to self-serving behavior at the costs of shareholders equity. Consistent with this perspective, McLaughlin (1990) finds that both target advisors and acquirer advisors are contractually incentivized with a high variable payment linked to successful deal completion and size of the deal: the higher the negotiated deal price, the higher the payoff for the advisor. Work by Coffman and Real (2018) on justifiability of difficult managerial decisions suggests that delegation to advisors plays an important role for executives. This is likely also the case in implementing and justifying M&A deals in the current governance structure. Recent work by Golubov and Xiong (2020) shows that private acquirers with less severe governance problems pay indeed lower prices for targets. Assuming an overpayment interpretation, we estimate the monetary effect of acquirer advisor engagement in the range of approximately 355m US Dollar per transaction.

Considering target shareholders' interest of maximizing deal value by achieving high M&A selling prices, contractual incentives of both top executives and sell-side advisors are closely aligned. However, incentive schemes for top executives and respective acquirer advisors on the buy-side bear a risk of misalignment with shareholders' interests. Roll (1986), Hayward and Hambrick (1997) or Malmendier and Tate (2005) are prominent sources, suggesting that buyers often overpay due to CEO hubris or overconfidence, destroying value of shareholders' equity. Our findings contribute an additional explanation to overpayments in M&A. Both top buy-side executives and acquirer advisors maximize their individual payoffs, based on incentives provided by M&A bonus contracts and advisor contracts, by prioritizing

[4] Grinstein and Hribar (2003) use deal premium as a measure of deal performance, defined as the target price in the deal, divided by the market value of the target four weeks before the deal. They obtain information on the number of board meetings from the proxy statements, and on the number of advisors and the market premium from SDC.

deal completion and benefitting from high prices. More junior executives obtain careers benefits from playing along, as well (Botelho et al., 2018).

A second interesting perspective of our results regards the potential role for overconfidence on the sell-side of M&A transactions. Only a share of 62% of the transactions involve a target advisor. This seems at odds with the unambiguous and simultaneously positive effects of target advisors on pricing and deal completion likelihood, and given that a similar share of acquirers engages a buy-side advisor (for whom engagement is costly both in terms of fees, and prices, as we have shown). Custódio and Metzger (2013) also show that CEOs with target-industry experience are less likely to engage an advisor in diversifying acquisitions. One interpretation for these results is provided in the context of the work by Malmendier and Tate (2005) and Roll (1986) in terms of evidence for overconfidence and hubris. While these authors like Roll (1986) or Malmendier and Tate (2005) focus on the buy-side, the current evidence suggests that these effects may affect behavior on the sell-side.

Assuming the validity of our interpretations, stricter supervisory control in M&A projects may thus be warranted to improve decisions given the aforementioned misaligned incentives. However, while Goranova et al. (2017) show that increased monitoring by supervisory boards helps containing M&A losses, they also observe that tighter control reduces M&A gains. We conclude that the decision to engage an advisor, and the subsequent effects of the advisor on transaction outcomes, are likely influenced by both aspects of a potentially misaligned incentive structure and psychological aspects like executives' overconfidence. Biases may also be present at the level of supervisory boards. Further research is needed though, to identify the exact decision processes to unambiguously separate incentive effects from potentially irrational, hubris-driven behavioral influences.

References

Agrawal, A., Cooper, T., Lian, Q., and Wang, Q. (2013). Common Advisers in Mergers and Acquisitions: Determinants and Consequences. *The Journal of Law and Economics, 56*(3), 691-740.

Agrawal, A., Cooper, T., Lian, Q., and Wang, Q. (2018). Does Hiring M&A Advisers Matter for Private Sellers? *Working Paper.*

Andrade, G., Mitchell, M. and Stafford, E. (2001). New Evidence and Perspectives on Mergers. *Journal of Economic Perspectives*, *15*, 103–120.

Becher, D.A., Cohn, J.B., Juergens, J.L. (2015). Do Stock Analysts Influence Merger Completion? An Examination of Postmerger Announcement Recommendations. *Management Science, 61*(10), 2430-2448.

Botelho, E.L., Powell, K.R., Wong, N. (2018). The Fastest Path to the CEO Job, According to a 10-Year Study. *Harvard Business Review*. https://hbr.org/2018/01/the-fastest-path-to-the-ceo-job-according-to-a-10-year-study

Caliendo, M., and Becker, S.O. (2007). Sensitivity Analysis for Average Treatment Effects. *The Stata Journal, 7*(1), 71-83.

Caliendo, M. and Kopeinig, S. (2008). Some Practical Guidance for the Implementation of Propensity Score Matching. *Journal of Economic Surveys, 22*(1), 31–72.

Chang, X., Shekhar, C., Tam, L.H.K., and Yao, J. (2016). The Information Role of Advisors in Mergers and Acquisitions: Evidence from Acquirers Hiring Targets' Ex-advisors. *Working Paper*.

Chang, X., Shekhar, C., Tam, L.H.K., and Yao, J. (2016). Industry Expertise, Information Leakage and the Choice of M&A Advisors. *Journal of Business Finance & Accounting, 43*(1) & (2), 191-225.

Coffman, L.C. and Real, A.G. (2018). Moral Perceptions of Advised Actions. *Management Science, 65*(8), 3904-3927.

Custódio, C. and Metzger, D. (2013). How Do CEOs Matter? The Effect of Industry Expertise on Acquisition Returns. *The Review of Financial Studies, 26*(8), 2008–2047.

Damodaran, A. (2005). Valuation Approaches and Metrics: A Survey of the Theory and Evidence. *Foundations and Trends in Finance, 1*(8), 693–784.

Francis, B.B., Hasan, I., and Sun, X. (2014). The certification role of financial advisors in cross-border M&As. *International Review of Financial Analysis, 32,* 143-158.

Goranova, M.L., Priem, R.L., Ndofor, H.A., and Trahms, C.A. (2017). Is there a "Dark Side" to Monitoring? Board and Shareholder Monitoring Effects on M&A Performance Extremeness. *Strategic Management Journal, 38,* 2285-2297.

Grinstein, Y. and Hribar, P. (2003). CEO compensation and incentives: evidence from M&A bonuses. *Journal of Financial Economics, 73,* 119-143.

Golubov, A. and Xiong, N. (2020). Post-acquisition performance of private acquirers. *Journal of Corporate Finance*, *60*, 101545.

Golubov, A., Petmezas, D. and Travlos, N. G. (2012). When It Pays to Pay Your Investment Banker: New Evidence on the Role of Financial Advisors in M&As. *Journal of Finance, 67*, 271-311.

Groysberg, B., Kelly, L. K., & MacDonald, B. (2011). The new path to the C-suite. *Harvard Business Review,* 89, 60–68.

Hayward, M.L.A. (2003). Professional Influence: The Effects of Investment Banks on Clients' Acquisition Financing and Performance. *Strategic Management Journal, 24,* 783-801.

Hayward, M.L.A. and Hambrick, D. C. (1997). Explaining the Premiums Paid for Large Acquisitions: Evidence of CEO Hubris. *Administrative Science Quarterly, 42*, 103-127.

Hoetker, G. (2007). The use of logit and probit models in strategic management research: Critical Issues. *Strategic Management Journal, 28(4),* 331-343.

Hunter, W.C. and Jagtiani, J. (2003). An analysis of advisor choice, fees, and effort in mergers and acquisitions. *Review of Financial Economics, 12,* 65–81.

Ismail, A. (2010). Are good financial advisors really good? The performance of investment banks in the M&A market. *Review of Quantitative Finance and Accounting, 35,* 411–429.

Jeongil, S., Gamache, D.L., Devers, C.E., and Carpenter, M.A. (2015). The Role of CEO Relative Standing in Acquisition Behavior and CEO Pay. *Strategic Management Journal*, *36,* 1877-1894.

John, K., Liu, L. and Taffler, R. (2010). It Takes Two to Tango: Overpayment and Value Destruction in M&A Deals. *Working Paper, New York University.*

Koller, T., Goedhart, M. and Wessels, D. (2010). Valuation: Measuring and Managing the Value of Companies. *Wiley Finance, 6th Edition.*

Lessem, J. and Wright, M. (2019). M&A Fee Guide 2018-2019 Key findings based on a global survey of 480 investment bankers and M&A advisors. *https://www.firmex.com/resources/market-reports/ma-fee-guide-2018-2019/*

Loughran, T., and Wellman, W. J. (2011). New Evidence on The Relation between The Enterprise Multiple and Average Stock Return. *Journal of Financial and Quantitative Analysis, 46*(6), 1629-1650.

Malmendier, U. and Tate, G. (2005). CEO Overconfidence and Corporate Investment. *The Journal of Finance, 60*(6), 2661-2700.

McLaughlin, R.M. (1990). Investment-banking contracts in tender offers. *Journal of Financial Economics, 28,* 209-232.

Moeller, S., Schlingemann, F. P., and Stulz, R.M. (2004). Firms size and gains from acquisitions. *Journal of Financial Economics, 73*, 201-228.

Rau, P.R. (2000). Investment bank market share, contingent fee payments, and the performance of acquiring. *Journal of Financial Economics, 56,* 293-324.

Sleptsov, A., Anand, J. and Vasudeva, G. (2013). Relational Configurations with Information Intermediaries: The Effect of Firm-Investment Bank Ties on Expected Acquisition Performance. *Strategic Management Journal, 34,* 957-977.

Renneboog, L. and Vansteenkiste, C. (2019). Failure and success in mergers and acquisitions. *Journal of Corporate Finance, 58*, 650-699.

Roll, R. (1986). The Hubris Hypothesis of Corporate Takeovers. *The Journal of Business, 59(2),* 197-216.

Roy, A.D. (1951). Some Thoughts on the Distribution of Earnings. *Oxford Economic Papers, 3*(2), 135–146.

Rubin, D.B. (1974). Estimating causal effects of treatments in randomized and nonrandomized studies. *Journal of Educational Psychology, 66*(5), 688-701.

Uysal, V. B., Kendia, S., and Panchapagesan, V. (2008). Geography and acquirer returns. *Journal of Financial Intermediation*, *17*, 256-275.

Wang, C., Xie, F., and Zhang, K. (2020). Expert Advice: Industry Expertise of M&A Advisors and Acquirer Shareholder Returns. *Working Paper.*

Table 1. *Summary Statistics – Completed Transactions*

Time Period			**1978 to 1999**					**2000 to 2020**		
Variable	Obs	Mean	Std.Dev.	Min	Max	Obs	Mean	Std.Dev.	Min	Max
Financials										
Ebitda Multiple	9293	17.859	49.78	.001	977.275	19654	20.84	57.147	.001	985.898
Ebitda Multiple(log)	9293	2.207	1.05	-6.908	6.885	19654	2.244	1.17	-6.908	6.894
Sales Absolute (m)	9197	564.444	1708.79	1.483	14426.23	19630	753.643	2016.124	1.483	14426.23
Sales Absolute(log)	9197	4.461	1.934	.394	9.577	19630	4.866	1.931	.394	9.577
Ebitda Absolute (m)	9182	75.165	243.004	-.146	2184.6	19395	111.759	307.065	-.146	2184.6
Ebitda Absolute(log)	9084	2.355	2.058	-5.521	7.689	19162	2.783	2.11	-6.215	7.689
Ebitda Margin	9293	.171	.148	.001	1	19654	.189	.177	.001	1
Deal Size (m)	9293	488.204	1544.519	.505	15025.07	19654	783.756	2136.208	.505	15025.07
Deal Size(log)	9293	4.311	1.986	-.683	9.617	19654	4.625	2.177	-.683	9.617
Target Advisor	9293	.642	.479	0	1	19654	.652	.476	0	1
Acquirer Advisor	9293	.55	.498	0	1	19654	.592	.491	0	1
Premium1Day	4585	32.595	36.352	-70.83	202.2	11699	25.324	38.037	-70.83	202.2
Premium1Week	4506	37.968	38.288	-71.43	212	11692	27.879	39.219	-71.43	212
Premium1Month	4505	43.058	41.017	-72.03	223.56	11680	31.017	41.806	-72.03	223.56
CAR (-1/+1)	3888	.001	.041	-.132	.149	3435	.002	.039	-.132	.149
CAR (-2/+2)	3888	.004	.081	-.233	.28	3435	.002	.078	-.233	.28
CAR (-3/+3)	3888	.003	.089	-.259	.298	3435	.001	.087	-.259	.298
CAR (-4/+4)	3888	.003	.095	-.269	.311	3435	.001	.092	-.269	.311
Public Status of the Target										
Public	9293	.685	.464	0	1	19654	.696	.46	0	1
Subsidiary	9293	.113	.317	0	1	19654	.126	.332	0	1
Private	9293	.195	.396	0	1	19654	.173	.379	0	1
Other Status	9293	.004	.06	0	1	19654	.001	.032	0	1
Deal Attitude										
Friendly	9293	.934	.248	0	1	19654	.928	.258	0	1
Neutral	9293	.007	.086	0	1	19654	.03	.17	0	1
Hostile	9293	.027	.162	0	1	19654	.004	.062	0	1
Other Attitude	9293	.031	.174	0	1	19654	.038	.191	0	1

Notes: We use Thomson Reuters SDC Platinum database on mergers and acquisitions transactions to gather all reported M&A transactions during 1978 and 2020. Data is sourced through direct deal submissions from global banking and legal contributors coupled with extensive research performed by a global research team, collecting data from regulatory filings, corporate statements, media, and pricing wires. According to Thomson Reuters, more than 2,500 control validations occur at the point of data entry. We use CRSP database to model Cumulative Abnormal Returns (CAR). We estimate the model over a 255-day window ending 46 days prior to the announcement date, using CRSP Value Weighted Index as our market proxy. We report CAR over a 3-, 5-,7- and 9-day window. To account for outliers, we winsorize the variables Premium (1 day, 1 week, 1 month) and CAR (-1/+1, -2/+2, -3/+3, -4/+4). Reported values are after winsorizing. Further, we focus on transactions with a deal size above $ 1m and exclude transactions with negative Ebitda Margin, but otherwise make use of the full data set. This table summarizes all completed transactions.

Table 2. *Summary Statistics – Incompleted Transactions*

Time Period			**1978 to 1999**					**2000 to 2020**		
Variable	Obs	Mean	Std.Dev.	Min	Max	Obs	Mean	Std.Dev.	Min	Max
Financials										
Ebitda Multiple	2462	15.296	41.692	.002	754.516	4570	19.312	55.655	.004	984.56
Ebitda Multiple(log)	2462	2.033	1.085	-6.215	6.626	4570	2.128	1.188	-5.521	6.892
Sales Absolute (m)	2424	866.64	2212.229	1.483	14426.23	4564	892.483	2290.827	1.483	14426.23
Sales Absolute(log)	2424	4.992	1.96	.394	9.577	4564	5	1.985	.394	9.577
Ebitda Absolute (m)	2420	109.761	296.855	-.146	2184.6	4534	138.723	361.291	-.146	2184.6
Ebitda Absolute(log)	2397	2.805	2.063	-4.075	7.689	4484	2.915	2.186	-6.215	7.689
Ebitda Margin	2462	.161	.149	.001	.994	4570	.183	.166	.001	.989
Deal Size (m)	2462	671.709	1964.001	.505	15025.07	4570	935.128	2570.408	.505	15025.07
Deal Size(log)	2462	4.504	2.061	-.683	9.617	4570	4.44	2.367	-.683	9.617
Target Advisor	2462	.503	.5	0	1	4570	.494	.5	0	1
Acquirer Advisor	2462	.38	.486	0	1	4570	.455	.498	0	1
Premium1Day	1555	31.724	38.168	-70.83	202.2	3415	23.92	42.183	-70.83	202.2
Premium1Week	1520	35.768	40.223	-71.43	212	3421	26.37	44.128	-71.43	212
Premium1Month	1514	39.42	42.605	-72.03	223.56	3414	29.191	47.048	-72.03	223.56
CAR (-1/+1)	648	-.001	.044	-.132	.149	460	-.005	.039	-.132	.149
CAR (-2/+2)	648	-.004	.079	-.233	.28	460	-.011	.082	-.233	.28
CAR (-3/+3)	648	-.009	.084	-.259	.298	460	-.013	.092	-.259	.298
CAR (-4/+4)	648	-.01	.09	-.269	.311	460	-.017	.101	-.269	.311
Public Status of the Target										
Public	2462	.894	.308	0	1	4570	.884	.32	0	1
Subsidiary	2462	.042	.201	0	1	4570	.048	.215	0	1
Private	2462	.061	.24	0	1	4570	.066	.248	0	1
Other Status	2462	.002	.04	0	1	4570	0	.021	0	1
Deal Attitude										
Friendly	2462	.686	.464	0	1	4570	.794	.404	0	1
Neutral	2462	.006	.08	0	1	4570	.022	.147	0	1
Hostile	2462	.18	.385	0	1	4570	.037	.188	0	1
Other Attitude	2462	.127	.333	0	1	4570	.147	.354	0	1

Notes: We use Thomson Reuters SDC Platinum database on mergers and acquisitions transactions to gather all reported M&A transactions during 1978 and 2020. Data is sourced through direct deal submissions from global banking and legal contributors coupled with extensive research performed by a global research team, collecting data from regulatory filings, corporate statements, media, and pricing wires. According to Thomson Reuters, more than 2,500 control validations occur at the point of data entry. We use CRSP database to model Cumulative Abnormal Returns (CAR). We estimate the model over a 255-day window ending 46 days prior to the announcement date, using CRSP Value Weighted Index as our market proxy. We report CAR over a 3-, 5-,7- and 9-day window. To account for outliers, we winsorize the variables Premium (1 day, 1 week, 1 month) and CAR (-1/+1, -2/+2, -3/+3, -4/+4). Reported values are after winsorizing. Further, we focus on transactions with a deal size above $ 1m and exclude transactions with negative Ebitda Margin, but otherwise make use of the full data set. This table summarizes all incompleted transactions.

Table 3. *Summary Statistics – Key variables by Advisor Engagement Constellation*

	All	TA+ AA+	TA+ AA-	TA- AA+	TA- AA-
Transactions	35,979	15,923	6,347	3,835	9,874
Share of transactions (relative)		44.26%	17.64%	10.66%	27.44%
Completed Deals	28,947	13587	5188	3157	7015
Share of Completed Deals (relative)	80.46%	85.33%	81.74%	82.32%	71.05%
Deal Size (mean) in $m	718.978	1185.674	496.22	198.85	89.65
Ebitda Multiple (mean)	19.497	20.038	19.594	20.176	19.666
Premium1Day	27.135	29.392	30.218	19.744	18.908
Premium1Week	30.352	32.798	33.58	23.226	21.503
Premium1Month	33.893	36.457	37.435	26.957	24.974
CAR (-1/+1)	0.0010	-.001	.002	.004	.007
CAR (-2/+2)	0.0014	-.007	.007	.018	.024
CAR (-3/+3)	0.0004	-.008	.008	.018	.023
CAR (-4/+4)	0.0003	-.008	.007	.024	.022
Sales absolute (mean) in $m	730.399	1013.217	570.944	439.344	275.815
Ebitda Margin	0.182	0.192	0.178	0.182	0.172
Ebitda Absolute (mean) in $m	105.607	150.776	79.029	59.738	34.241

Notes: TA+ (and TA-) indicates the engagement (not engagement) of target advisor in the transaction. AA+ (AA-) indicates the engagement (not engagement) of acquirer advisor in the transaction. Based on this definition, the four advisor engagement constellation TA+AA+ (advisors on sell- side and buy-side), TA+AA- (advisor only on sell-side), TA-AA+ (advisor only on the buy-side), and TA-AA- (no advisor engaged on neither side) are defined.

Table 4. *OLS Regressions: Advisor engagement and Pricing Premia and Cumulative Abnormal Returns – 1978 to 1999*

	(1) EbitdaMultiple (log)	(2) Premium 1Day	(3) Premium 1Week	(4) Premium 1Month	(5) CAR4 LOG	(6) CAR3 LOG	(7) CAR2 LOG	(8) CAR1 LOG
Target Advisor	0.298***	1.706	1.191	1.796	-0.162	-0.159	-0.267**	-0.353***
	(0.036)	(3.013)	(3.194)	(3.426)	(0.112)	(0.124)	(0.112)	(0.125)
Acquirer Advisor	0.315***	-2.620	-1.365	0.810	0.168	-0.022	0.039	-0.317*
	(0.046)	(3.546)	(3.749)	(4.225)	(0.137)	(0.140)	(0.147)	(0.177)
TA x AA	-0.049	2.307	2.093	0.643	-0.186	0.061	0.094	0.330*
	(0.050)	(3.907)	(4.110)	(4.609)	(0.160)	(0.171)	(0.189)	(0.195)
Sales Absolute(log)	-0.180***	-0.585	-0.597	-0.850*	0.011	0.002	0.006	0.002
	(0.010)	(0.431)	(0.435)	(0.455)	(0.024)	(0.027)	(0.026)	(0.023)
EBITDA Margin	-2.320***	-12.805***	-16.339***	-22.520***	0.151	0.024	-0.082	-0.048
	(0.117)	(4.919)	(5.379)	(5.715)	(0.270)	(0.242)	(0.240)	(0.277)
Deal Level Controls	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Year, Industry and Country Fixed Effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Constant	3.065***	36.821***	42.535***	48.789***	-3.181***	-3.185***	-3.315***	-3.992***
	(0.047)	(3.378)	(3.467)	(3.665)	(0.122)	(0.119)	(0.130)	(0.133)
Obs.	9176	4534	4456	4458	1810	1801	1824	1842
R-squared	0.254	0.145	0.142	0.148	0.247	0.247	0.243	0.225

Notes: Entries show coefficients of OLS regressions. Standard errors are in parenthesis. The dependent variables are *Ebitda Multiple(log), Premium (1 day, 1 week, 1 month) and Cumulative Abnormal Returns (-1/+1, -2/+2, -3/+3, -4/+4),* indicating the relative deal price of the transaction, premia paid by the acquirer and cumulative abnormal returns earned by the bidder in the respective event window. We use the covariates *Sales Absolute (Log)* and *Ebitda Margin;* also including further deal level controls *Deal Attitude* (friendly, neutral, hostile), *Target Public Status* (public, private) as well as *Form of the Transaction* (acquisition, merger, or other form of transaction). We use fixed effects variables for time period (year), industry of the M&A target and country (headquarters) of the target. We analyze the effect of buy-side and sell-side advisor engagement on pricing, premia, and cumulative abnormal returns in the time period 1978 to 1999. ***, **, and * denote significance at the 0.01, 0.05, and 0.1 level.

Table 5. *OLS Regressions: Advisor engagement and Pricing Premia and Cumulative Abnormal Returns – 2000 to 2020*

	(1) EbitdaMultiple (log)	(2) Premium 1Day	(3) Premium 1Week	(4) Premium 1Month	(5) CAR4 LOG	(6) CAR3 LOG	(7) CAR2 LOG	(8) CAR1 LOG
Target Advisor	0.297***	0.194***	0.235***	0.221***	-0.293**	-0.219*	-0.219*	-0.262**
	(0.030)	(0.063)	(0.057)	(0.058)	(0.125)	(0.126)	(0.126)	(0.113)
Acquirer Advisor	0.351***	0.148**	0.218***	0.174***	-0.245	0.044	0.044	-0.481***
	(0.032)	(0.064)	(0.060)	(0.060)	(0.150)	(0.141)	(0.141)	(0.153)
TA x AA	0.031	-0.079	-0.174***	-0.109	0.414**	0.115	0.115	0.414**
	(0.038)	(0.075)	(0.067)	(0.067)	(0.169)	(0.170)	(0.170)	(0.172)
Sales Absolute(log)	-0.185***	-0.058***	-0.059***	-0.048***	0.034	0.053*	0.053*	0.099***
	(0.007)	(0.008)	(0.008)	(0.008)	(0.025)	(0.027)	(0.027)	(0.025)
EBITDA Margin	-2.103***	-0.781***	-0.787***	-0.646***	0.407*	0.074	0.074	0.015
	(0.069)	(0.094)	(0.090)	(0.085)	(0.242)	(0.245)	(0.245)	(0.249)
Deal Level Controls	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Year, Industry and Country Fixed Effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Constant	3.127***	3.279***	3.360***	3.384***	-3.428***	-3.574***	-3.574***	-3.708***
	(0.034)	(0.061)	(0.058)	(0.058)	(0.142)	(0.151)	(0.151)	(0.144)
Obs.	19616	9717	9907	9984	1698	1655	1655	1674
R-squared	0.233	0.151	0.160	0.150	0.263	0.264	0.264	0.294

Notes: Entries show coefficients of OLS regressions. Standard errors are in parenthesis. The dependent variables are *Ebitda Multiple(log), Premium (1 day, 1 week, 1 month) and Cumulative Abnormal Returns (-1/+1, -2/+2, -3/+3, -4/+4),* indicating the relative deal price of the transaction, premia paid by the acquirer and cumulative abnormal returns earned by the bidder in the respective event window. We use the covariates *Sales Absolute (Log)* and *Ebitda Margin;* also including further deal level controls *Deal Attitude* (friendly, neutral, hostile), *Target Public Status* (public, private) as well as *Form of the Transaction* (acquisition, merger, or other form of transaction). We use fixed effects variables for time period (year), industry of the M&A target and country (headquarters) of the target. We analyze the effect of buy-side and sell-side advisor engagement on pricing, premia, and cumulative abnormal returns in the time period 2000 to 2020. ***, **, and * denote significance at the 0.01, 0.05, and 0.1 level.

Table 6. *Probit and OLS: Advisor engagement effect on Deal Completion – 1978 to 1999 and 2000-2020*

	1978-1999	1978-1999	2000-2020	2000-2020
	Completed Probit (1)	Completed OLS (2)	Completed Probit (3)	Completed OLS (4)
Target Advisor	0.725***	0.165***	0.495***	0.120***
	(0.051)	(0.010)	(0.035)	(0.007)
Acquirer Advisor	0.788***	0.180***	0.514***	0.129***
	(0.067)	(0.013)	(0.039)	(0.008)
TA x AA	-0.261***	-0.059***	-0.222***	-0.053***
	(0.081)	(0.016)	(0.048)	(0.010)
Sales Absolute(log)	-0.071***	-0.016***	-0.023***	-0.004***
	(0.010)	(0.002)	(0.008)	(0.001)
EBITDA Margin	0.037	0.007	0.091	0.031**
	(0.125)	(0.026)	(0.072)	(0.015)
Deal Level Controls	Yes	Yes	Yes	Yes
Year, Industry and Country Fixed Effects	Yes	Yes	Yes	Yes
Constant	-0.917	0.694***	1.116**	0.703***
	(1.001)	(0.012)	(0.452)	(0.008)
Obs.	11515	11592	24129	24179
R-squared	0.283	0.305	0.212	0.256

Notes: We analyze the effect of buy-side and sell-side advisor engagement on deal completion likelihood between two time periods 1978 to 1999 and 2000 to 2020. 1 and 3: Entries show coefficient of Probit regressions. 2 and 4: Entries show coefficients of OLS regressions. Standard errors are in parenthesis. The dependent variable is *Completed*, indicating the status of the transaction. We use the covariates *Sales Absolute (Log)* and *Ebitda Margin*; also including further deal level controls *Deal Attitude (friendly, neutral, hostile), Target Public Status (public, private)* as well as *Form of the Transaction (acquisition, merger, or other form of transaction)*. We use fixed effects variables for time period (year), industry of the M&A target and country (headquarters) of the target. ***, **, and * denote significance at the 0.01, 0.05, and 0.1 level.

Table 7. *Propensity score matching*: *Average Treatment Effects of Advisor Engagements on Relative Deal Pricing*, *Deal Completion, and Returns*

	(1a) Acquirer Advisor ATE	(1b) Acquirer Advisor ATE	(2a) Target Advisor ATE	(2b) Target Advisor ATE
Ebitda Multiple (Log)	0.409***	0.375***	0.453***	0.439***
	(0.021)	(0.022)	(0.025)	(0.062)
Deal Completion	0.123***	0.085***	0.170***	0.101***
	(0.006)	(0.009)	(0.011)	(0.019)
Premium 1 Day	3.409***	3.903***	5.230***	1.371
	(0.838)	(1.345)	(1.439)	(2.754)
Premium 1 Week	4.749***	5.095***	5.190***	-0.229
	(0.895)	(1.346)	(1.215)	(2.561)
Premium 1 Month	5.712***	4.050***	6.023***	4.386
	(0.920)	(1.412)	(1.523)	(2.872)
Cumulative Abnormal Return -1/+1	-0.005***	-0.004**	-0.001	-0.002
	(0.002)	(0.002)	(0.002)	(0.005)
Cumulative Abnormal Return -2/+2	-0.011***	-0.013***	-0.009**	-0.011
	(0.003)	(0.003)	(0.004)	(0.012)
Cumulative Abnormal Return -3/+3	-0.010**	-0.014**	-0.007*	-0.0129
	(0.004)	(0.006)	(0.004)	(0.008)
Cumulative Abnormal Return -4/+4	-0.009**	-0.012**	-0.009***	-0.0157*
	(0.004)	(0.005)	(0.003)	(0.001)

Notes: The table shows propensity score matching models (nearest neighbor estimator with replacement) results. 1a and 2a include the full sample of transactions. Models 1b (resp. 2b) use the samples restricted to transactions in which the Target Advisor (resp. Acquirer Advisor) is present. ATE is defined as the average treatment effect of *Ebitda Multiple (log), Completed, Premium (1 day, 1 week, 1 month),* and *Cumulative Abnormal Return (event window -1/+1, -2/+2, -3/+3, -4/+4)*, indicating the difference between outcomes of transactions with and without advisor present. Bootstrap standard errors are in parenthesis. We use the covariates *Sales Absolute (Log)* and *Ebitda Margin;* also including further deal level controls such *as Deal Attitude* (friendly, neutral, hostile), *Target Public Status* (public, private). We use fixed effects variables for time period (year), industry of the M&A target and country (headquarters) of the target. We analyze the causal effect of buy-side and sell-side advisor engagement on relative deal pricing and deal completion likelihood. Further, we analyze advisor engagement effect on premia paid and cumulative abnormal returns. ***, **, and * denote significance at the 0.01, 0.05, and 0.1 level.

Table 8. *Fixed Effects Model – Behavioral change of former Lehman clients (prior and after Lehman crisis, Sep 15, 2008)*

	Acquirer Advisor
Former Lehman Clients Post Crisis	-0.101***
	(0.036)
Sales Absolute (Log)	0.097***
	(0.003)
EBITDA Margin	0.214***
	(0.035)
Constant	0.168
	(0.146)
Further Deal Level Controls	Yes
Time, Industry and Country Fixed Effects	Yes
Obs.	5403
R-squared	0.1640

Notes: Entry shows coefficients of OLS regression. Standard errors are in parenthesis. The dependent variable is the *Acquirer Advisor,* indicating the engagement of buy-side advisor on the transaction. We use the covariates *Sales Absolute (Log)* and *Ebitda Margin;* also including further deal level controls such *as Deal Attitude* (friendly, neutral, hostile), *Target Public Status* (public, private) as well as *Form of the Transaction* (acquisition, merger, or other form of transaction). We use fixed effects variables for acquirer, time period (month), industry of the M&A target and country (headquarters) of the target. We analyze behavioral change of former Lehman clients after the crisis starting from Sep 15, 2008. The variable Former Lehman Clients Post Crisis is our instrumental variable in the subsequent instrumental variables' analyses. ***, **, and * denote significance at the 0.01, 0.05, and 0.1 level.

Table 9. *Instrumental Variables 2SLS Model: Acquirer Advisor effect on deal completion*

	(1) Completed Probit	First Stage	(2) Completed 2SLS
Acquirer Advisor	0.301***		0.760**
	(0.050)		(0.384)
Sales Absolute (Log)	-0.039***	0.097***	-0.075**
	(0.013)	(0.003)	(0.037)
EBITDA Margin	-0.009	0.214***	-0.134
	(0.124)	(0.035)	(0.090)
Former Lehman Clients Post Crisis		-0.101***	
		(0.04)	
Constant	2.972***	0.167	0.935***
	(0.687)	(0.146)	(0.180)
Deal Level Controls	Yes	Yes	Yes
Time, Industry, Acquirer, and Country Fixed Effects	Yes	Yes	Yes
Obs.	5403	5403	5403

Notes: Entry 1 shows coefficients of probit regression; entry 2 shows coefficient of 2SLS regression. Standard errors are in parenthesis. The dependent variable is the *Completed,* indicating the status of transaction. We use the covariates *Sales Absolute (Log)* and *Ebitda Margin;* also including further deal level controls *Deal Attitude* (friendly, neutral, hostile), *Target Public Status* (public, private) as well as *Form of the Transaction* (acquisition, merger, or other form of transaction. We use fixed effects variables for acquirer, time period (month), industry of the M&A target and country (headquarters) of the target. We instrument the presence of the acquirer advisor with the instrument *Former Lehman Clients Post Crisis* as described in table 9. ***, **, and * denote significance at the 0.01, 0.05, and 0.1 level.

Table 10. *Instrumental Variables 2SLS: Acquirer Advisor engagement effect on relative deal pricing*

	(1) Ebitda Multiple (log) OLS	First Stage	(2) Ebitda Multiple (log) 2SLS
Acquirer Advisor	0.525*** (0.034)		2.166** (1.074)
Sales Absolute (Log)	-0.175*** (0.009)	0.097*** (0.003)	-0.334*** (0.104)
EBITDA Margin	-1.649*** (0.088)	0.214*** (0.035)	-1.999*** (0.252)
Former Lehman Clients Post Crisis		-0.101*** (0.04)	
Constant	5.781*** (0.359)	0.1675 (0.146)	5.374*** (0.504)
Further Deal Level Controls	Yes	Yes	Yes
Time, Industry, Acquirer, and Country Fixed Effects	Yes	Yes	Yes
Obs.	5,403	5,403	5,403

Notes: Entry 1 shows coefficient of OLS regressions; entry 2 shows coefficient of 2SLS regression. Standard errors are in parenthesis. The dependent variable is the *Ebitda Multiple(log)* of the transaction of the acquisition. We use the covariates *Sales Absolute (Log)* and *Ebitda Margin;* also including further deal level controls *Deal Attitude* (friendly, neutral, hostile), *Target Public Status* (public, private) as well as *Form of the Transaction* (acquisition, merger, or other form of transaction). We use fixed effects variables for acquirer, time period (month), industry of the M&A target and country (headquarters) of the target. We instrument the presence of the acquirer advisor with the instrument *Former Lehman Clients Post Crisis* as described in table 9. ***, **, and * denote significance at the 0.01, 0.05, and 0.1 level.

Table 11. *Deal Pricing: Differences in degree of information asymmetries: listed vs. non-listed targets; TA present*

	Ebitda Multiple (Log)	Ebitda Multiple (Log)
	(1)	(2)
Model	OLS	OLS
Acquirer Advisor	0.290***	0.412***
	(0.035))	(0.032)
Public Target	0.026	0.105***
	(0.031)	(0.028)
Acquirer Advisor x Public Target	-0.156***	-0.120***
	(0.041)	(0.036)
Sales Absolute (Log)		-0.161***
		(0.004)
EBITDA Margin		-1.438***
		(0.043)
Constant	2.182***	2.365***
	(0.025)	(0.080)
Deal Level Controls	No	Yes
Time, Industry, Acquirer, and Country Fixed Effects	No	Yes
# Obs.	18775	9,676
(Pseudo) R-squared	0.007	0.124

Notes: Entry 1 shows coefficient of OLS regressions. The dependent variable is the *Ebitda Multiple(log)* of the transaction of the acquisition. We use the covariates *Sales Absolute (Log)* and *Ebitda Margin;* also including further deal level controls *Deal Attitude* (friendly, neutral, hostile), *Target Public Status* (public, private) as well as *Form of the Transaction* (acquisition, merger, or other form of transaction). We use fixed effects variables for acquirer, time period (month), industry of the M&A target and country (headquarters) of the target. We estimate the interaction effect of the public target status on relative deal pricing in transactions with an Acquirer Advisor present. ***, **, and * denote significance at the 0.01, 0.05, and 0.1 level.

Table 12. *Deal Pricing: Effects of AA with TA present vs. absent*

	Ebitda Multiple (Log) (1) TA present	Ebitda Multiple (Log) (2) TA absent
Acquirer Advisor	0.316***	0.378***
	(0.019)	(0.029)
Sales Absolute (Log)	-0.148***	-0.262***
	(0.006)	(0.011)
EBITDA Margin	-1.949***	-2.508***
	(0.068)	(0.100)
Constant	3.227***	3.407***
	(0.035)	(0.047)
Deal Level Controls	Yes	Yes
Year, Industry and Country Fixed Effects	Yes	Yes
# Obs.	18697	10070
(Pseudo) R-squared	0.259	0.251

Notes: Entry 1 shows coefficient of OLS regressions. The dependent variable is the *Ebitda Multiple(log)* of the transaction of the acquisition. We use the covariates *Sales Absolute (Log)* and *Ebitda Margin;* also including further deal level controls *Deal Attitude* (friendly, neutral, hostile), *Target Public Status* (public, private) as well as *Form of the Transaction* (acquisition, merger, or other form of transaction). We use fixed effects variables for acquirer, time period (month), industry of the M&A target and country (headquarters) of the target. Given that advisors on both sides of the deal will be similarly affected by incentives and anticipation of deal worth, we further reduce selection problems by focusing on those transactions with at least a target advisor present. ***, **, and * denote significance at the 0.01, 0.05, and 0.1 level.

Appendix A: Definition of Terms

Table A1. *Key Terms and Definitions*

Term	Definition
Target Financial Advisor	Financial advisor(s) to the target company, its management or board of directors on the transaction.
Acquirer Financial Advisor	Financial advisor(s) to the acquiror's company, its management or board of directors on the transaction.
Deal Size	Value of Transaction ($): Total value of consideration paid by the acquiror, excluding fees and expenses. The dollar value includes the amount paid for all common stock, common stock equivalents, preferred stock, debt, options, assets, warrants, and stake purchases made within six months of the announcement date of the transaction. Liabilities assumed are included in the value if they are publicly disclosed. Preferred stock is only included if it is being acquired as part of a 100% acquisition. If a portion of the consideration paid by the acquiror is common stock, the stock is valued using the closing price on the last full trading day prior to the announcement of the terms of the stock swap. If the exchange ratio of shares offered changes, the stock is valued based on its closing price on the last full trading date prior to the date of the exchange ratio change. For public target 100% acquisitions, the number of shares at date of announcement is used.
Ebitda Multiple	The EBITDA multiple is a financial ratio that compares a company's Enterprise Value to its annual EBITDA. This multiple is used to determine the value of a company and compare it to the value of other, similar businesses. A company's EBITDA multiple provides a normalized ratio for differences in capital structure, taxation, fixed assets, and for comparing disparities of operations in various companies. The ratio takes a company's enterprise value (which represents market capitalization plus net debt) and compares it to the Earnings Before Interest, Taxes, Depreciation, and Amortization (EBITDA) for a given period.
Premium 1 day	Premium 1 Day Prior to Announcement Date: Premium of offer price to target closing stock price 1 day prior to the original announcement date, expressed as a percentage
Premium 1 Week	Premium 1 Week Prior to Announcement Date: Premium of offer price to target closing stock price 1 week prior to the original announcement date, expressed as a percentage
Premium 1 Month	Premium 4 Weeks Prior to Announcement Date: Premium of offer price to target closing stock price 4 weeks prior to the original announcement date, expressed as a percentage
Cumulative Abnormal Return(-1/+1)	Cumulative Abnormal Returns -1/+1 indicates the sum of the differences between the expected return (S&P500 Index) on the acquirer's stock (US publicly listed firms) and the actual return during the event windows of 1 day prior and 1 day after announcement of the acquisition.
Cumulative Abnormal Return (-2/+2)	Cumulative Abnormal Returns -2/+2 indicates the sum of the differences between the expected return (S&P500 Index) on the acquirer's stock (US publicly listed firms) and the actual return during the event windows of 2 days prior and 2 days after announcement of the acquisition.
Cumulative Abnormal Return (-3/+3)	Cumulative Abnormal Returns -3/+3 indicates the sum of the differences between the expected return (S&P500 Index) on the acquirer's stock (US publicly listed firms) and the actual return during the event windows of 3 days prior and 3 days after announcement of the acquisition.
Cumulative Abnormal Return (-4/+4)	Cumulative Abnormal Returns -4/+4 indicates the sum of the differences between the expected return (S&P500 Index) on the acquirer's stock (US publicly listed firms) and the actual return during the event windows of 4 days prior and 4 days after announcement of the acquisition.

Sales Absolute	Net Sales represents sales receipts for products and services, net of cash discounts, trade discounts, excise tax, and sales returns and allowances. Revenues are recognized according to applicable accounting principles.
Ebitda Absolute	Earnings before the deduction of interest, taxes, depreciation, and amortization. It is a non-GAAP calculation based on data from a company's income statement used to measure a company's operating profitability. Because EBITDA adds back to net income the non-cash accounting charges of depreciation and amortization and disregards interest paid on debt financing and income taxes on earnings, it is useful for measuring a company's operating cash flow and for comparing the profitability of companies with different capital structures and in different tax brackets. However, EBITDA does not measure, and should not be confused with, the actual cash flow of a company which accounts for interest paid on debt financing, income taxes and other cash charges.
Ebitda Margin	Ebitda Absolute a as a percentage of Sales Absolute.
Target Industry	Industry in which the M&A target operates
Target Country	Country of the selling company’s headquarters
Acquirer Industry	Industry in which the buying company operates
Acquirer Country	Country of the buying company’s headquarters
Deal Status	Status of the transaction process: (1) Deal completed, (2) Deal pending, (3) Deal intended, (4) Deal withdrawn or (5) Other deal status
Form of Transaction	Scope of transaction (e.g. full acquisition vs. Acquisition of shares)

Appendix B: Acquirer Advisor Impact in Monetary Terms - Estimation based on an Adjusted Ebitda Multiple Model

Price Effect caused by Acquirer Advisor Engagement ($m; in real terms, 2019)

Model	Reported Ebitda Multiple (mean)	Reported Deal Size $m	Reported Number of Transactions (Completed)	AA Impact	Adjusted Ebitda Multiple (Mean)	Adjusted Deal Size (Mean) $m	Overpayment per Transaction $m	Overpayment Total $m
1 TA+AA+	20.04	1,186	15,923	31.60%	15.23	901	285	4,533,372
2 TA-AA+	20.18	199	3,835	37.80%	14.64	144	55	209,186
			19,758					**4,742,559**
							per Transaction $m nominal	$ 240.03
							per Transaction $m real	$ 355.25

Notes: Our financial model quantifies the price effect by discounting reported average Ebitda Multiples by the coefficients from OLS regression shown in Table 12 and multiplying the adjusted average Ebitda Multiple with average Ebitda Absolute of transactions in which acquirer advisor were involved. 2019 dollars.